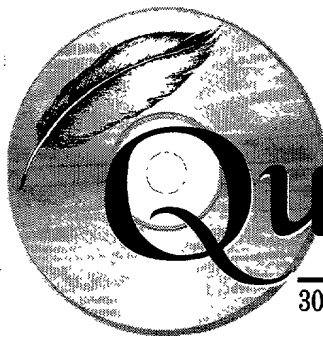


10-18-00

A

10/17/00
JC948 U.S. PTO



Quill & Disc

incorporated

30844 NE 1st Avenue St. Joseph, MN 56374 Voice: (320) 363-7296 Fax: (320) 363-8443

JC841 U.S. PTO

09/690662

10/17/00

Case Docket No. Hoeft-001017

THE COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

Sir:

Transmitted herewith for filing is the patent application of

Inventor: Duane A. Erwin

For: Remote Broadcasting System

Enclosed are:

Return postcard;
Certificate of express mailing (1 page);
A check in the amount of \$400. to cover the filing fee;
Triplicate copies of this sheet;
Specification, claims and abstract (21 pages);
9 sheets of drawings;
Declaration, power of attorney and petition (2 pages); and
Verified statement claiming small entity status (2 pages).

The Commissioner is hereby authorized to charge payment of the following fees associated with this communication or credit any overpayment to Deposit Account No. 17-0155:

Any additional filing fees required under 37 CFR 1.16; and
Any patent application processing fees under 37 CFR 1.17.

Respectfully submitted,

Albert Watkins, reg. no. 31,676

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Certificate under 37 CFR 1.10 of Mailing by "Express Mail"

EK955803704US

"Express Mail" label number

17 OCT 00

Date of Deposit

I hereby certify that this correspondence is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.



Signature of person mailing correspondence

Albert W. Watkins

Typed or printed name of person mailing correspondence

Note: Each paper must have its own certificate of mailing by "Express Mail".

JC841 U.S. PTO
09/690662
10/17/00

VERIFIED STATEMENT CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) & 1.27(b))--INDEPENDENT INVENTOR

Docket Number **Hoeft - 001017**

Applicant or Patentee: Duane A. Erwin

Serial or Patent No.: Herewith

Filed or Issued: Herewith

Title: Remote Broadcasting System

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9(c) for purposes of paying reduced fees to the Patent and Trademark Office described in the specification filed herewith with title as listed above.

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

☐ No such person, concern, or organization exists.

☒ Each such person, concern or organization is listed below.

K-PRO MTC, GEP

Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF INVENTOR

Duane A. Erwin

Signature of inventor

Date

10/17/00

VERIFIED STATEMENT CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) & 1.27(c))--SMALL BUSINESS CONCERN

Docket Number **Hoeft - 001017**

Applicant or Patentee: Duane A. Erwin

Serial or Patent No.: Herewith

Filed or Issued: Herewith

Title: Remote Broadcasting System

I hereby declare that I am

☒ the owner of the small business concern identified below:

☐ an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF SMALL BUSINESS CONCERN: K-Pro Marketing Group

ADDRESS OF SMALL BUSINESS CONCERN P.O. Box 5164, St. Cloud, MN 56302

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 13 CFR 121.12, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees to the United States Patent and Trademark Office, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention described in the specification filed herewith with title as listed above.

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights in the invention must file separate verified statements averring to their status as small entities, and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization having any rights in the invention is listed below:

☒ no such person, concern, or organization exists.

☐ each such person, concern or organization is listed below.

Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true: and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING

Kipp Hoeft

TITLE OF PERSON IF OTHER THAN OWNER

ADDRESS OF PERSON SIGNING

P.O. Box 5164, St. Cloud, MN 56302

SIGNATURE



DATE

10/17/00

Docket No.: Hoeft - 001017

APPLICATION
FOR
UNITED STATES LETTERS PATENT

Title: Remote Broadcasting System

Inventor: Duane A. Erwin

BACKGROUND OF THE INVENTION

1. FIELD OF THE INVENTION

The present invention pertains generally to vehicle-supported electrical audio signal processing systems. More specifically, the invention comprises a complete remote broadcasting system built into and advantageously integrated with features relatively unique to a vehicle, including local power and amplification, limited access and built-in security, signal source switching between public address and various audio sources, and output to selectable internal and external speakers and also through a remote transmitter. In one more specific embodiment, a novel tuned-port speaker is provided in combination with the vehicle-supported remote broadcast system.

2. DESCRIPTION OF THE RELATED ART

In the broadcasting field, two general systems have been implemented to serve the needs of on-location broadcasting. The first prior art system uses a trailer to transport audio components to a site. At the site, the audio components are unpacked and connected electrically as required. Typically, a gasoline engine electrical generator is included as one of the components, and the generator must be started to provide electrical energy to the broadcasting components. This system has several inherent disadvantages. First of all, the components used for on-location broadcasting generally include several massive loudspeakers. To move these loudspeakers may require several strong persons, which means that these systems not only require the DJ or announcer, but also require one or more additional persons just to unpack and pack the gear. A second disadvantage is the time

required to pack and unpack, which is wasted time. The gear is also not easily anchored after it is unpacked, meaning the DJ must remain close to the gear and must pay close attention thereto, in order to prevent theft or vandalism. Not only are the components of a broadcast system expensive, in this trailer system the wiring is also exposed and readily cut or damaged. Consequently, the DJ or another person must stand guard over the equipment during the entire broadcast session. Unfortunately, the generator must be run to provide power to the equipment. Since the DJ must stay close to the equipment, the noise from the generator presents undesirable background noise and potential electrical interference which the DJ cannot escape. Finally, the equipment is exposed to the vagaries of an outdoor environment during the broadcast, requiring careful wiring and weatherproof equipment.

In another prior art system, speakers may be provided for placement on top of a vehicle, out of a window, or out the rear doors of a van, pick-up or the like. In these systems, the vehicle must be stationary or moving relatively slowly, to prevent dislodging or damage to the equipment. Furthermore, the equipment is still exposed to theft and vandalism, and also the vagaries of weather, as in the trailer configuration.

Loudspeakers have been used in combination with vehicles for almost as long as vehicles have existed. The broader concept of a loudspeaker mounted through the side of a vehicle is illustrated, for example, in U.S. patent 3,043,912 to De Laney. Delaney discloses an automobile intercom that mounts a speaker into a wooden or plastic block and ducts the air through a hole in the vehicle side wall. Additional relevant documents include 2,110,358 to Dreisback; 4,009,375 to White et al; 4,192,216 to Wait; 4,701,627 to Gambuti et al; 5,170,435 to Rosen et al; 5,228,090 to Marler; 5,263,756 to Gaspar; 5,790,065 to Yaroach; 5,790,947 to Dieringer; 5,917,920 to Humphries; and 6,055,417 to Hill et al. Nevertheless, none of these systems integrate a high quality speaker system

into a vehicle for broadcasting exterior to the vehicle, nor do these patents illustrate the integration of a broadcasting system into a mobile vehicle. What is desirable then is to integrate the audio components more closely with a vehicle, to take advantage of the benefits inherent in the vehicle, such as the secure exterior which provides protection from weather and also theft or vandalism.

SUMMARY OF THE INVENTION

In a first manifestation the invention is a tuned-port electrical audio processing system for processing a plurality of electrical source signals and converting said plurality of electrical source signals into an audio broadcast. The electrical audio processing system is transported by a vehicle having an interior compartment surrounded by a vehicle exterior which protects the interior compartment from the vagaries of moisture, mud, dirt and debris during transport. The audio processing system has a means for providing electricity, a means for selecting an input signal from a plurality of sources, a means for amplifying the selected signal, a means for dividing the input signal into a plurality of frequency segregated output components, a means for converting one of the frequency segregated output components into a low frequency audible sound wave, and a means for selectively conducting low frequencies within the sound wave through the vehicle exterior while attenuating frequencies other than low frequencies. The tuned-port system conducts low frequencies to the vehicle exterior without coupling to the vehicle, thereby avoiding the generation of extraneous rumbling and rattling from various vehicle component resonances.

In a second manifestation, the invention is a full-feature, secure remote broadcast vehicle which is continuously setup. The vehicle is simultaneously secured against theft and vandalism in operation and while idle, thereby allowing an operator to leave the immediate vicinity of the vehicle and not risk loss due to theft or vandalism. A plurality of electro-audio components are mounted

within the vehicle, such as a CD, tape or DVD player, a radio broadcast receiver, a wireless microphone transmission receiver, an electrical generator, a remotely controlled selector switch, a loudspeaker, and a port coupled from the loudspeaker through the vehicle exterior which emanates audible sound waves exterior to the vehicle and which selectively enhances a narrow bandwidth of the audible sound wave. A microphone and a remote control are also provided which allow an operator to variably control source, including sounds picked up by the microphone, and volume of the audible sound wave for broadcast from the vehicle.

In a third manifestation, the invention is the combination of a speaker for converting electrical signals to audible sounds and a vehicle having an exterior body forming an enclosed space. A cross-over divides the electrical signals into a low frequency component and a high frequency component. A speaker housing encloses the speaker and blocks emanation of audible sounds directly from said speaker into an ambient exterior to said speaker housing. A tuned port selectively transmits a limited bandwidth of the audible sounds from the speaker housing through the exterior vehicle body.

OBJECTS OF THE INVENTION

A first object of the invention is to provide a remote broadcast vehicle which does not require any setup time to operate on-location, and which may be used while in motion as well as at rest. A second object of the invention is for the remote broadcast vehicle to remain fully enclosed and secured while in operation, without unacceptable degradation of the sound produced and emanating from the vehicle. A third object of the invention is to enable an announcer or DJ to move around separate from the remote broadcast vehicle, while still remaining in control of the sounds emanating therefrom. Another object of the invention is to provide a tuned port speaker system which permits broadcasting audio information at high volumes and power outputs through a vehicle wall without

initiating any resonance within the vehicle itself.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 illustrates a preferred embodiment remote broadcasting system designed in accord with the teachings of the present invention from a side plan view.

Figure 2 illustrates the preferred remote broadcasting system of figure 1 from a schematic top plan view with the roof removed, while figure 3 illustrates the remote broadcasting system from an end schematic view looking into the back of the van.

Figure 4 illustrates a preferred source of power for the preferred remote broadcasting system.

Figure 5 illustrates diagrammatically one preferred combination of audio components used in the implementation of the preferred remote broadcasting system.

Figure 6 illustrates by block diagram the various components used in the preferred combination of figure 5.

Figure 7 illustrates diagrammatically an alternative combination of audio components used in the implementation of the preferred remote broadcasting system.

Figure 8 illustrates an alternative embodiment deluxe remote broadcasting system designed in accord with the teachings of the present invention from a side plan view.

Figure 9 illustrates the alternative embodiment remote broadcasting system of figure 8 from a schematic top plan view with the roof removed, while figure 10 illustrates the remote broadcasting system from an end schematic view looking into the back of the truck.

Figure 11 illustrates a preferred embodiment ported loudspeaker designed in accord with the teachings of the present invention.

Figure 12 illustrates a second alternative embodiment remote broadcasting system designed

in accord with the teachings of the present invention from a side plan view, and from an end plan view in figure 13.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A preferred full-feature remote broadcast system 100 is most preferably assembled from a pre-manufactured vehicle 110. Vehicle 110 will most preferably be a van, truck, pick-up truck or the like, but it will be understood that other vehicles may be used, including passenger vehicles and trailers without departing from the full scope of the invention. Nevertheless, vehicle 110 will most preferably provide adequate space for and access to each of the components described herein below, and for this a larger vehicle is most preferred. In addition, a larger vehicle provides extra cargo space, when additional persons, gear, merchandise or the like must be transported. Access is provided through a door 120 as is known in the vehicle industry.

Speaker assemblies 560 and 560' may be mounted into the side wall of vehicle 110, and may pass through the body panels or may alternatively pass through windows, where the vehicle has windows at the desired locations. Most preferably, speaker assembly 560 may be used to convert electrical signals into audible sound waves which represent one channel of a stereo program, for example the left channel. Similarly, speaker assembly 560' will produce audible sound waves from the other channel, for example the right channel. Speaker assemblies 560 and 560' will most preferably be separated physically from each other by as much space as practical, given the limitations of vehicle 110, to preserve the full three-dimensional auditory effect of a stereo broadcast as much as possible. Once again, a larger vehicle 110 such as a van or truck facilitates this separation. Speaker assemblies 560 and 560' will most preferably be weatherproof speakers having a high quality audible reproduction characteristic. Nevertheless, the specific geometries illustrated herein for these

assemblies is not critical to the workings of the invention. Speakers which provide a desired durability, weather resistance, physical dimension and quality of sound reproduction will be acceptable regardless of their construction or type, within reason.

Speaker assembly 570 is a sub-woofer driver and tuned port which conveys audible sound waves to the exterior of vehicle 110. Placement of assembly 570 is not consequential to the invention, owing to the non-directional nature of low-frequency sounds. For the purposes of this disclosure, low frequency sounds will be understood to be those frequencies which are non-directional and which are within the range of significant mechanical resonance of vehicle body panels and parts. Generally, these frequencies are below about 100 Hertz, and more commonly are below 60 Hertz. Many sub-woofers operate at even lower frequencies, below 30 Hertz and even some lower still. The exact frequency range for these low-frequency sounds will be readily determined by the system designer as will be apparent when considered in light of the present disclosure. Most preferably, the tuned port will attenuate frequencies outside of a relatively narrow band of low-frequency sounds, while simultaneously reinforcing the low-frequency sounds within the narrow band of frequencies. The design of critical dimensions used in such ports is known in the loudspeaker industry, and will not be repeated herein, though it will be understood that a remote broadcast system 100 will require such design.

Figures 2 and 3 illustrate preferred remote broadcast system 100 from a top plan view with the roof removed and from an end plan view with the back doors removed, respectively, each having features removed strictly for illustrative purposes. As can be seen therein, ported speaker assembly 570 may pass through not just one side of vehicle 110, but will also most preferably include a second similar ported speaker assembly 565 for broadcasting from the opposite side of vehicle 110. Similar speaker assembly pairs are provided in speaker assemblies 555 and 555'. The exact number, spacing

and directional orientation of the various speaker assemblies is not critical to the operation of the invention, though the orientation and spacing illustrated herein is most preferred to provide a broadcast signal from both sides of vehicle 110. Nevertheless, it will be understood that only one set of speaker assemblies pointing in a single direction may be adequate for some applications, while others may require speakers pointing in every direction, or at least from three of the four sides of vehicle 110. Once again, those skilled in the art will recognize the various alternatives.

Speaker assembly 570 includes a dual-resonance chamber design having ports 1132 and 1134 which are tuned to a center frequency of between 20 and 60 Hertz. In larger vehicles 110, this design can accommodate lower frequencies and will be tuned to a center frequency closer to 20 Hertz, while in smaller compartments ports 1132 and 1134 will need to be tuned to frequencies closer to 60 Hertz. Port 1140 may be similarly tuned to resonant frequencies in the 40 to 100 Hertz range, thereby broadening the bandwidth of the tuned port.

Several antennas are provided in remote broadcast system 100, including an antenna 527 for an up-link to a base broadcasting station. This up-link may utilize a component known as a Marti box, or other suitable gear. Antenna 527 will facilitate this transmission. Antennas 512 and 514 are provided for communication between a wireless control and/or microphone and audio gear within vehicle 110 which will be described in greater detail hereinbelow. Once again, the exact placement of antennas 512, 514 and 527 is not critical to the invention, so long as the antennas do not physically or electrically interfere with each other.

The preferred electrical power source 400 includes an alternator 410 having a pulley 420 for driving engagement with a belt as is known in the vehicle industry. However, most preferably alternator 410 is completely independent from the electrical system provided at the factory for vehicle 110, and will instead only provide power through cabling 430 to the audio components of the remote

broadcast system 100. This reduces electrical interference and noise, while also ensuring that vehicle 110 will start and operate even if the full capacity of battery 400 electrical storage is consumed during a broadcasting session. Where vehicle 110 is a trailer, the electrical power must be provided through a trailer hitch electrical connection. As an alternative shown in figure 6, the existing alternator can be used. In this case, it will generally be desirable to incorporate a diode isolator 460 to allow the current from alternator 410 to be split between the factory vehicle wiring and wiring for system 100 without direct connection therebetween. Additional noise filters may also be provided as required in power source 400.

Figure 5 illustrates diagrammatically the various audio components 500 used in preferred remote broadcast system 100, though it will be understood by those skilled in the art that various components may be added or removed for the specific needs of a particular designer. Figure 6 also illustrates each of these components by block diagram. A player 505 designed for reproducing pre-recorded audio information may be part of vehicle 110 original equipment, or may be added as a custom feature. Player 505 may include one or more of the commercial players, including such devices as audio CD players, tape players, DVD players and the like. A receiver 510 for wireless information such as might be transmitted by wireless microphone 520 and wireless remote control 515 includes two antennas 512 and 514 previously discussed. Wireless radio connections from microphone 520 and remote control 515 may be analog or digitally encoded, though an analog link is simpler and available for lower cost. Where an analog signal is incorporated, a twin-diversity type signal transmission is preferred which uses two simultaneous channels to prevent drop-outs from occurring. Up-link 525 is most preferably a Marti unit, and includes antenna 527. The outputs from each of these various components 505 - 527 are fed to a cross-over 530 which is designed to select from the various audio input sources and split the selected signal(s) into frequency and channel

segregated outputs. These outputs are then passed through amplifiers 535 - 550, where the electrical signal power is amplified and impedance matched to the various speakers of speaker assemblies 555 - 570.

An alternative audio component set-up 700 is illustrated in figure 7. Noteworthy here is the removable connections between speaker assemblies 562, 572 and amplifiers 540, 550. The application of this configuration is found where there is not adequate space within vehicle 110 to provide built-in speaker assemblies as shown in figure 1, for example. In these instances, separate mounts and electrical connections may be provided for speaker assemblies 562, 572, and the electrical connections must be removable. In addition, there is a two-way connection between up-link 525 and cross-over 530. This two-way connection allows the further possibility for the entire broadcast from a base radio station to be provided by remote broadcasting system 100 and transmitted through up-link 525 to the base radio station for re-broadcasting. Pre-recorded audio information may be passed from player 505 through cross-over 530 and into up-link 525, along with audible information from the announcer or DJ. In this instance, an audio mixing board separate from cross-over 530 may also be provided as is normally implemented in a base radio station. This system would, however, most preferably still allow for remote audio broadcasting without using up-link 525, and allow a remote DJ presentation.

Figures 8 - 11 illustrate a somewhat more deluxe remote broadcasting system 800 which includes four sub-woofer speaker assemblies 866, 867, 871 and 872. As is evident in figure 10, the use of a larger truck for vehicle 110 provides substantially better access to each of the components. Nevertheless, a large truck requires greater initial capital to purchase and may not provide the appearance sought by all remote broadcasters. One sub-woofer 872 of the four sub-woofer speaker assemblies 866, 867, 871 and 872 is illustrated in much greater detail in figure 11. Therein it will be

evident that cylindrical port 1140 passes directly from the front of driver 1130 out of compartment 1120 through assembly exterior wall 1105. Port 1140 has an opening 1142 within compartment 1120, and an opening 1144 which will most preferably pass beyond an exterior of vehicle 110. This port 1140 transmits low-frequency sound waves in a first direction from speaker box 110. A second port 1150 having openings 1152, 1154 is provided from the back side of driver 1130 in compartment 1115 and will transmit low-frequency sound waves through assembly exterior wall 1105 preferably beyond an exterior of vehicle 110. Port 1150 transmits most preferably in a second direction different from port 1140. This dual-direction transmission of low-frequency sound waves can be optimized with the geometry of vehicle 110 to provide strongly enhanced low-frequency output, such as is illustrated in figure 10 where speaker assembly 867 is ported through the left wall and floor, while speaker assembly 872 is ported through the right wall and floor.

Figures 12 and 13 illustrate a second alternative embodiment remote broadcast system 1200 including a pick-up truck 1210 as the vehicle. Pick-up 1210 has a door 1220 for access into an interior compartment, which may house one or more of the audio components securely therein. Cover 1230 removably covers the cargo area. Cover 1230 may be elevated by brackets 1235, which may additionally include or incorporate springs and shock-absorbers as is known in the art. End gate 1240 raises and lowers in the ordinary fashion, and when lowered as shown in the figures opens access to sub-woofer assembly 1270, having ports 1272 - 1278 therein. Additional ports may be provided through the sides of the cargo box, the floor or end gate 1240, and these ports may be in addition to or instead of ports 1272 - 1278, similar to the ported sub-woofers of the earlier embodiments disclosed herein above. Speakers 1260 and 1260' are removably mounted to supports within the cargo area, such that speakers 1260, 1260' may be stored within the cargo area and secured under cover 1230 when not in use, and placed as shown in figures 12 and 123 during use. This

second alternative embodiment 1200 does not offer all of the advantages of the preferred and first alternative embodiments described herein above, but nevertheless does expand the applicability of the present invention to alternative applications. Likewise, features that comprise each embodiment and known equivalents thereto may be used in combination with other embodiments. The present disclosure is not limited strictly to the specific embodiments illustrated herein but is instead open to an array of conceivable configurations. As is evident, in the earlier embodiments speaker assemblies 555 and 560 could be replaced by removable speakers similar to speakers 1260 and 1260', with the attendant requirement for mounting supports and electrical connectors to provide support and signal to the speaker assemblies.

While the foregoing details what is felt to be the preferred embodiment of the invention, no material limitations to the scope of the claimed invention are intended. Further, features and design alternatives that would be obvious to one of ordinary skill in the art are considered to be incorporated herein. For example, while the present system uses radio frequency transmissions from the microphone and remote, the use of an infra-red link such as a roof-mounted light waveguide or other transmission technique beyond radio is contemplated herein for the wireless components such as remote control and microphone. The scope of the invention is set forth and particularly described in the claims hereinbelow.

CLAIMS

We claim:

1. An electrical audio processing system for processing a plurality of electrical source signals and converting said plurality of electrical source signals into an audio broadcast, said electrical audio processing system transported by a vehicle having an interior compartment surrounded by a vehicle exterior which protects said interior compartment from the vagaries of moisture, mud, dirt and debris during transport, comprising:

a means for providing electricity to said electrical audio processing system;

a means for selecting at least one input signal from said plurality of electrical source signals;

a means for amplifying said selected at least one input signal;

a means for dividing said at least one input signal into a plurality of frequency segregated output components;

a means for converting a first one of said plurality of frequency segregated output components into a low frequency audible sound wave; and

a means for selectively conducting low frequencies within said low frequency audible sound wave from said converting means through said vehicle exterior in a first direction while attenuating frequencies other than said low frequencies;

whereby said low frequencies are conducted to said vehicle exterior without coupling to said vehicle.

2. The electrical audio processing system of claim 1 wherein said vehicle is self-propelled by a self-contained motive power system.

3. The electrical audio processing system of claim 2 wherein said means for providing electricity further comprises a means for inducing electricity from self-contained motive power system motive power and a means for distributing said induced electricity solely to said electrical audio processing system.
4. The electrical audio processing system of claim 3 further comprising a means for storing a sufficient quantity of said induced electricity for powering said electrical audio processing system through a broadcast of a coherent audio program without inducing additional electricity from said inducing means during said coherent audio program.
5. The electrical audio processing system of claim 1 further comprising a means for changing a second one of said plurality of frequency segregated output components into a high frequency audible sound-wave of frequency higher than said low frequency audible sound wave; and
a means for selectively conducting high frequencies within said high frequency audible sound wave from said changing means through said vehicle exterior in a first direction.
6. The electrical audio processing system of claim 1 further comprising a second means for selectively conducting low-frequencies within said low frequency audible sound wave from said converting means through said vehicle exterior in a second direction different from said first direction.
7. The electrical audio processing system of claim 1 further comprising a means for controlling said amplifying means and said selecting means from a remote location to control said selecting and said amplifying.

8. The electrical audio processing system of claim 1 further comprising a means for forming an electrical signal from an audible sound; and

a means for conveying said formed electrical signal to said selecting means to serve as a one of said plurality of electrical source signals.

9. The electrical audio processing system of claim 8 wherein said audible sound comprises a human voice, and said formed electrical signal is selected by said selecting means, whereby said human voice is amplified and broadcast through said vehicle exterior into public areas.

10. The electrical audio processing system of claim 8 wherein said forming and conveying means comprise a wireless diversity microphone.

11. A full-feature remote broadcast vehicle which is continuously setup and which is simultaneously secured against theft and vandalism in operation and while idle, comprising:

a player mounted within said vehicle for converting a pre-recorded audio signal into a first electrical signal representative of said pre-recorded audio signal;

a broadcast receiver mounted within said vehicle which receives broadcast signals representative of an audio program and converts said broadcast signals into a second electrical signal representative of said audio program;

a microphone which transmits an electrical transmission signal generated by said microphone representative of an audible input to said microphone;

a microphone transmission receiver mounted within said vehicle which receives said microphone transmission signal and converts said microphone transmission signal into a third

electrical signal representative of said audible microphone input;

an electrical source mounted within said vehicle for providing electrical energy;

a remotely controlled selector switch mounted within said vehicle for selecting at least one of said first electrical signal, said second electrical signal and said third electrical signal as a selected input and passing said selected input through to an output;

a loudspeaker mounted within said vehicle for converting said selector switch output to an audible sound wave;

a port coupled from said loudspeaker through said vehicle exterior which emanates said audible sound wave exterior to said vehicle in a first direction and which selectively enhances a narrow bandwidth of said low frequency audible sound wave; and

a remote control which receives human input from a point removed from said broadcast vehicle and responsive thereto variably controls said remotely controlled selector switch.

12. The remote broadcast vehicle of claim 11 further comprising an infra-red communications link between said remote control and said remotely controlled selector switch.

13. The remote broadcast vehicle of claim 11 wherein said port comprises a tuned port which selectively enhances a narrow low frequency bandwidth of said audible sound wave.

14. The remote broadcast vehicle of claim 13 further comprising additional loudspeakers mounted within said remote broadcast vehicle for converting electrical signals into additional audible sound waves; and

additional tuned ports for coupling said additional audible sound waves through said vehicle

exterior which selectively enhance additional narrow bandwidths.

15. The remote broadcast vehicle of claim 13 further comprising a second tuned port coupled from said converting means through said vehicle exterior which emanates said low frequency audible sound wave exterior to said vehicle in a second direction different from said first direction.

16. The remote broadcast vehicle of claim 11 further comprising an up-link mounted within said vehicle for transmitting said selector switch output to a central broadcast facility for further retransmission therefrom.

17. The remote broadcast vehicle of claim 11 wherein said electrical source comprises an electrical alternator which is isolated from an electrical system used by said vehicle for traffic signaling.

18. The remote broadcast vehicle of claim 11 further comprising a battery bank mounted within said vehicle for storing said electrical energy.

19. The remote broadcast vehicle of claim 11 wherein said player is selected from a CD player, a tape player and a DVD player.

20. The remote broadcast vehicle of claim 11 wherein said broadcast receiver further comprises a broadcast radio receiver.

21. The remote broadcast vehicle of claim 11 wherein said microphone transmission receiver receives said electrical transmission signal without wires through at least two reception paths.

22. The combination of a speaker for converting electrical signals to audible sounds and a vehicle having an exterior body forming an enclosed space within said vehicle and having access portals through which a human may pass for entry into said enclosed space and exit therefrom, wherein the improvement comprises:

a cross-over for dividing said electrical signals into a low frequency component and a high frequency component of relatively higher frequency than said low frequency component;

a speaker housing enclosing said speaker and blocking emanation of audible sounds directly from said speaker into an ambient exterior to said speaker housing; and

a tuned port for selectively transmitting a limited bandwidth of said audible sounds from said enclosed space through said exterior vehicle body.

23. The combination of a speaker and a vehicle of claim 22 further comprising a second tuned port for selectively transmitting a limited bandwidth of said audible sounds from said enclosed space through said exterior vehicle body.

24. The combination of a speaker and a vehicle of claim 23 wherein said second tuned port transmits said audible sounds in a direction different from said first tuned port.

25. The combination of a speaker and a vehicle of claim 24 further comprising a third tuned port for selectively transmitting a limited bandwidth of said audible sounds from said enclosed space

through said exterior vehicle body in a direction different from said first and second tuned ports.

ABSTRACT OF THE DISCLOSURE

A remote broadcast vehicle does not require any setup time, may remain fully enclosed and locked while in operation, and which prevents the ingress of moisture and other weather. The vehicle may include a player for pre-recorded audio programs, a radio broadcast station receiver, wireless microphone and wireless remote control, mixer, cross-over, amplifiers and speaker assemblies. The system may further be used to up-link a program to a base radio station, and provide full programming capability. Additionally, a tuned port speaker system is disclosed for broadcasting low frequencies through the vehicle wall. Several different vehicle embodiments are illustrated.

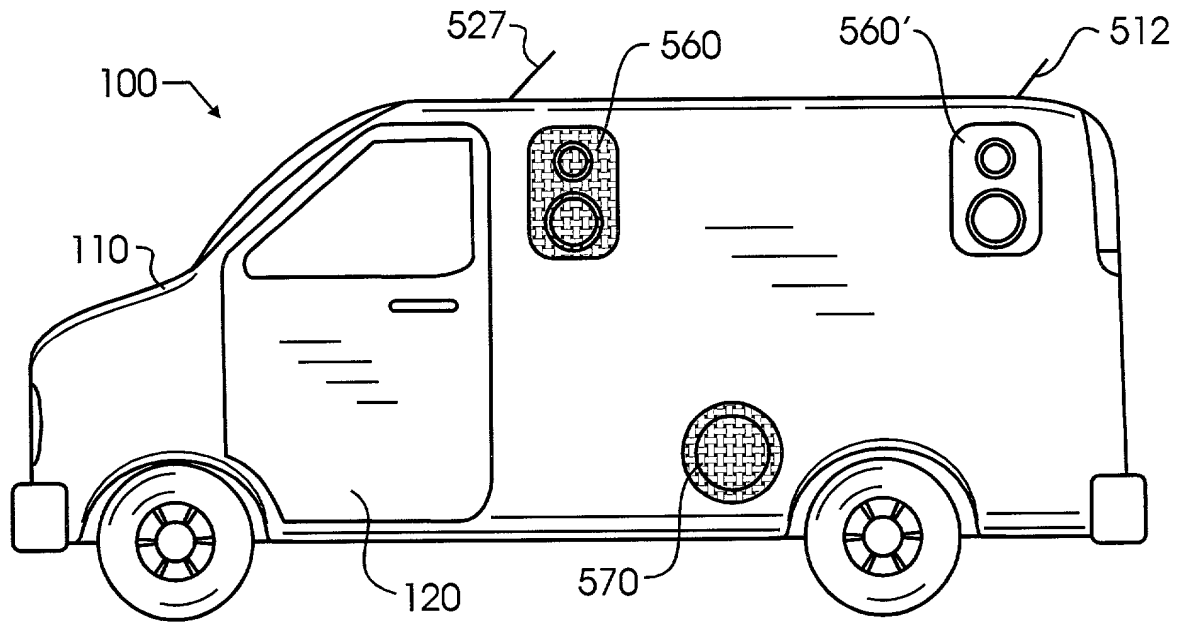


FIG. 1

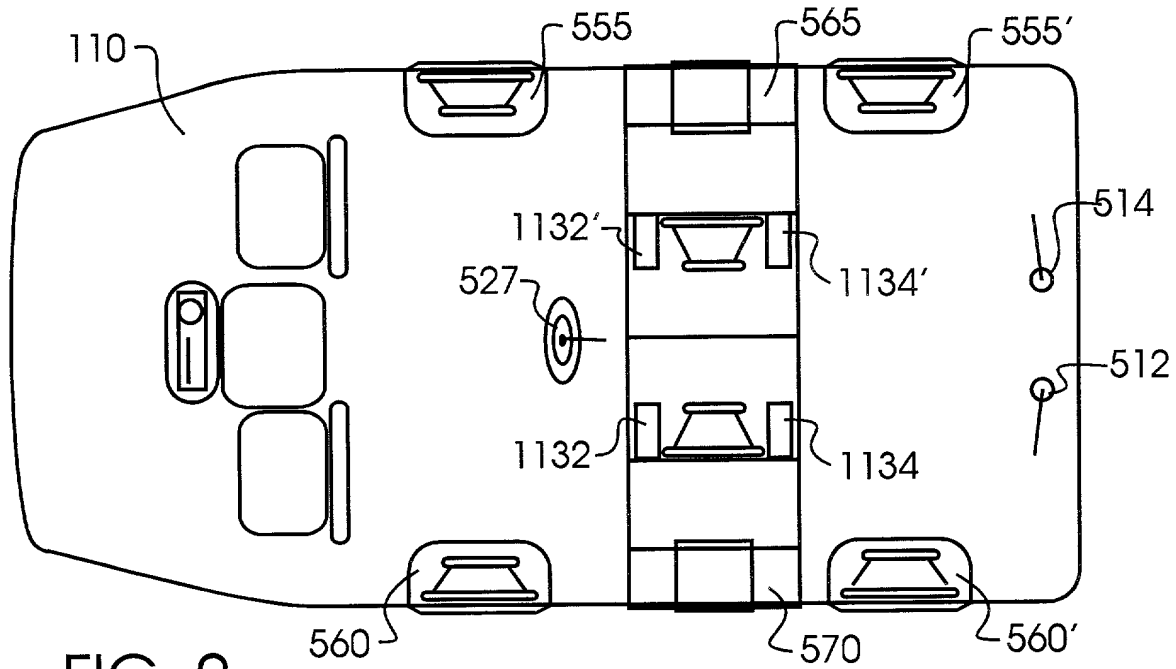


FIG. 2

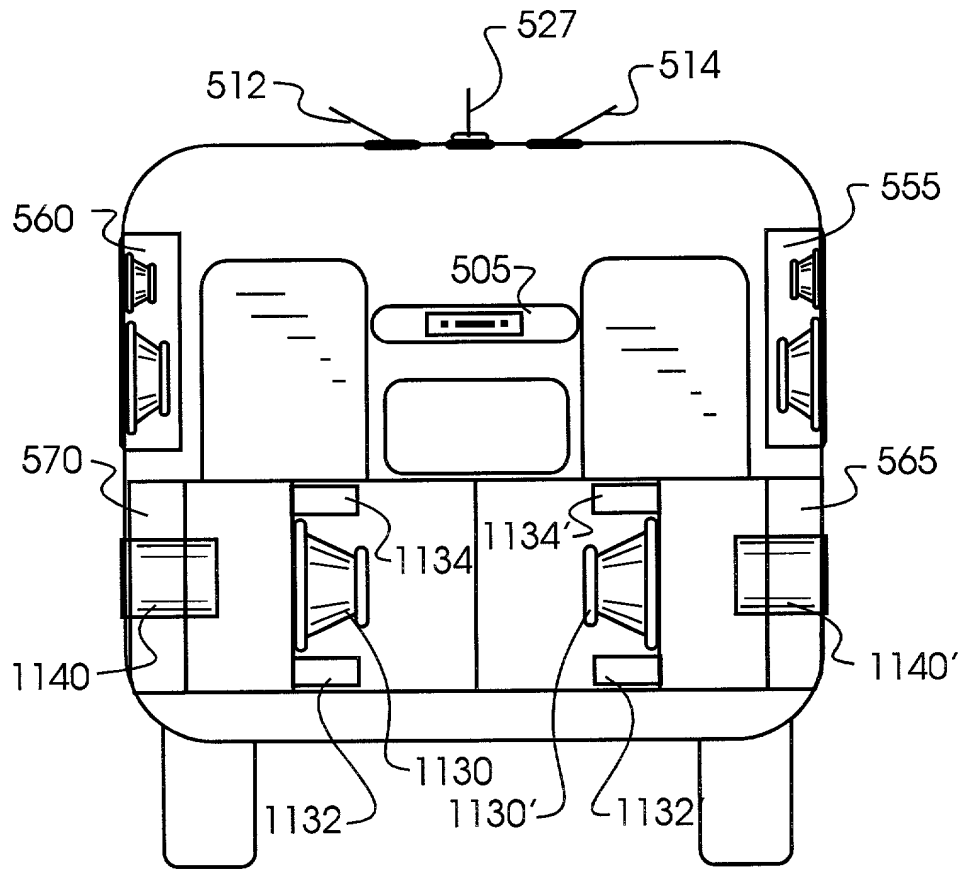


FIG. 3

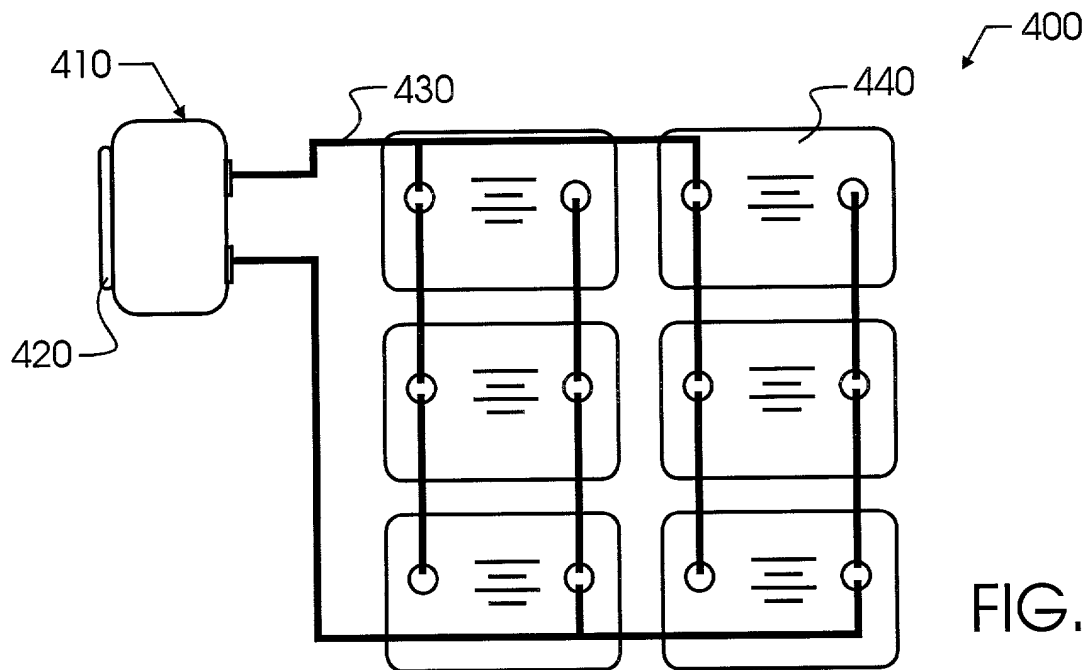


FIG. 4

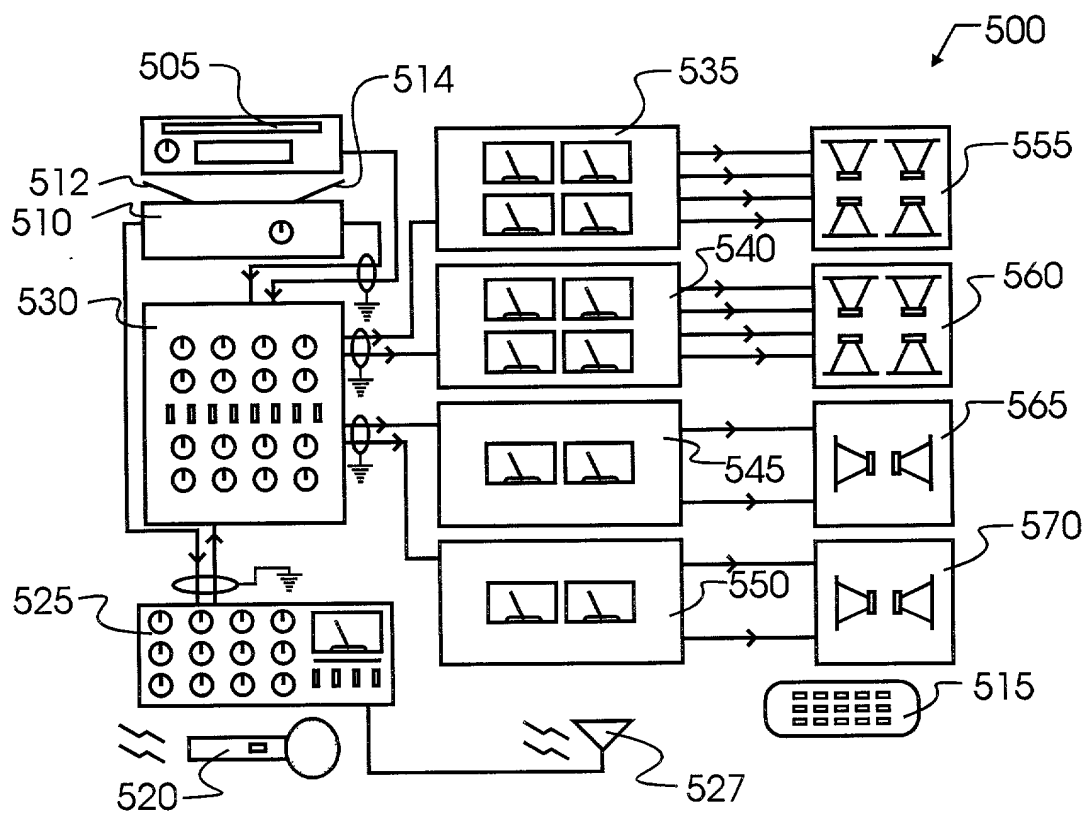


FIG. 5

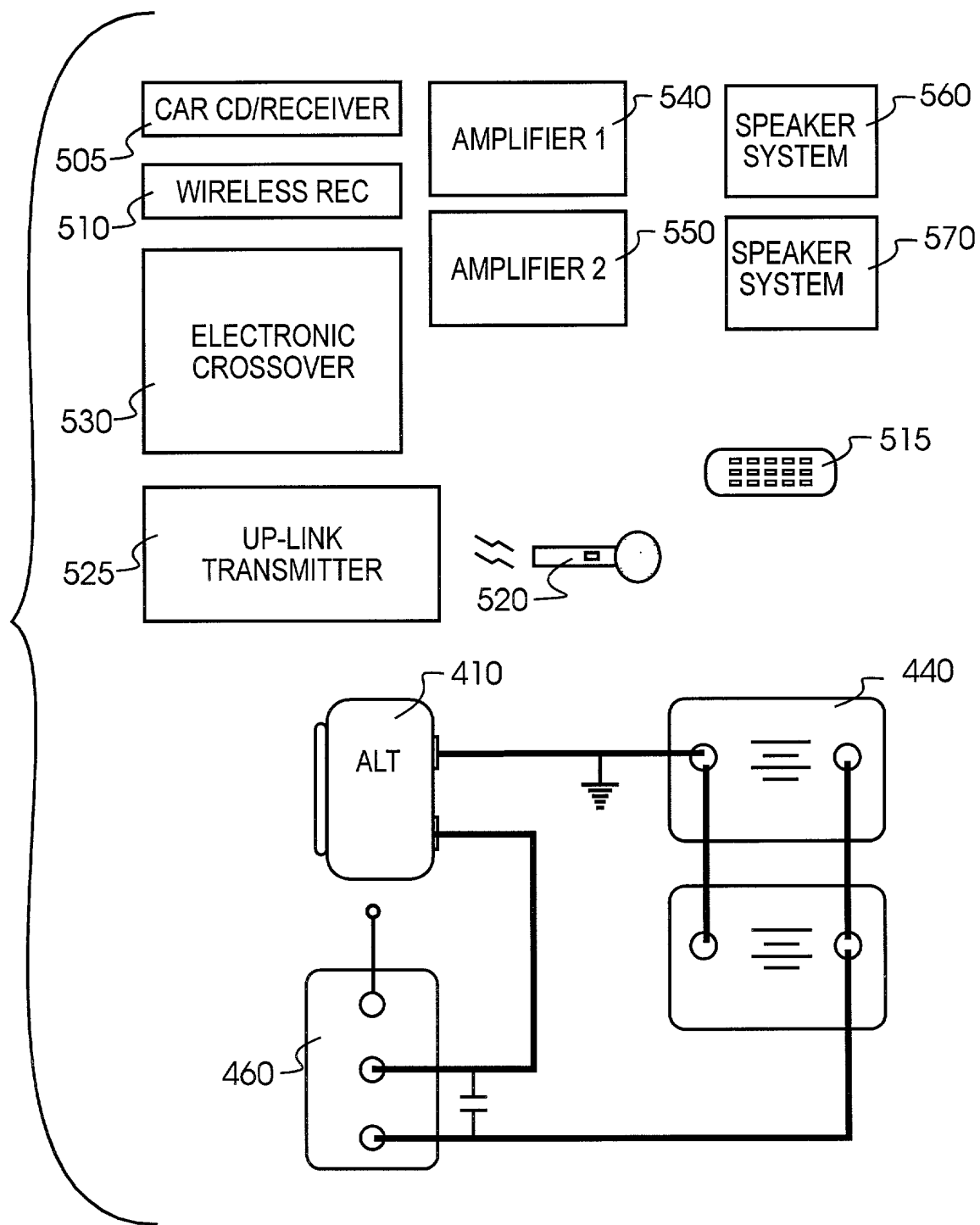


FIG. 6

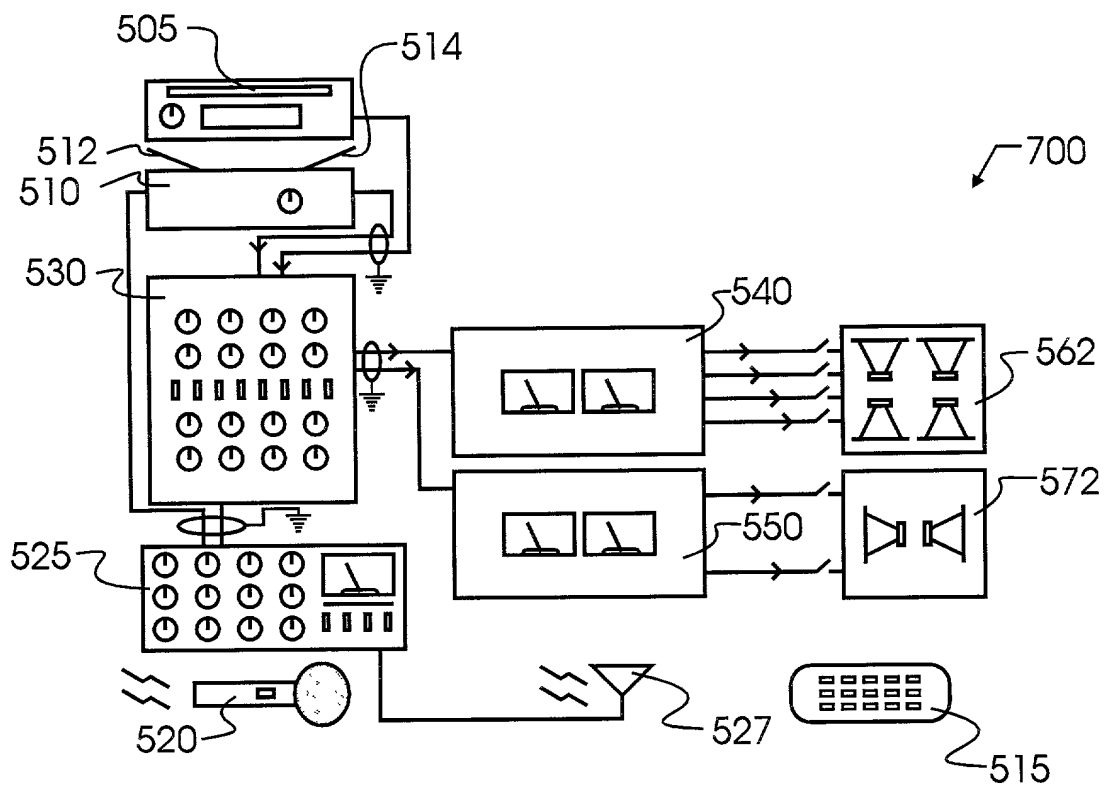


FIG. 7

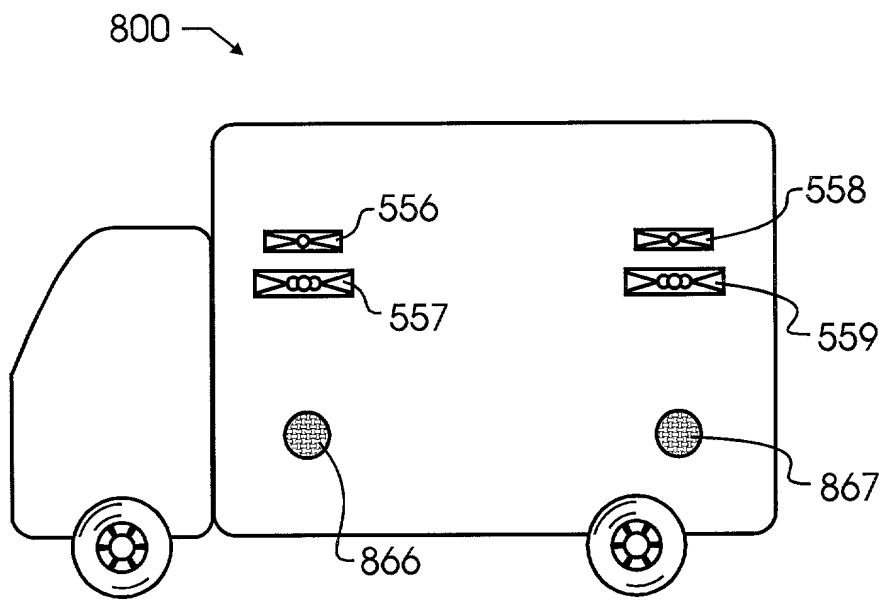


FIG. 8

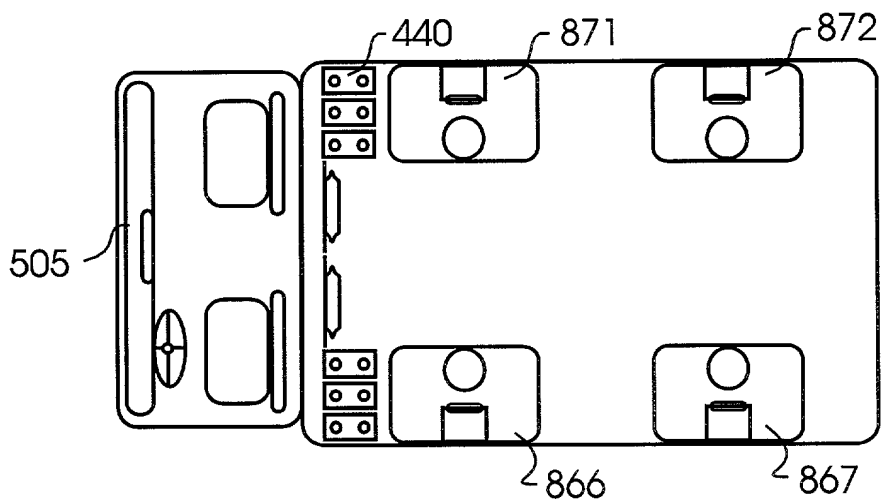


FIG. 9

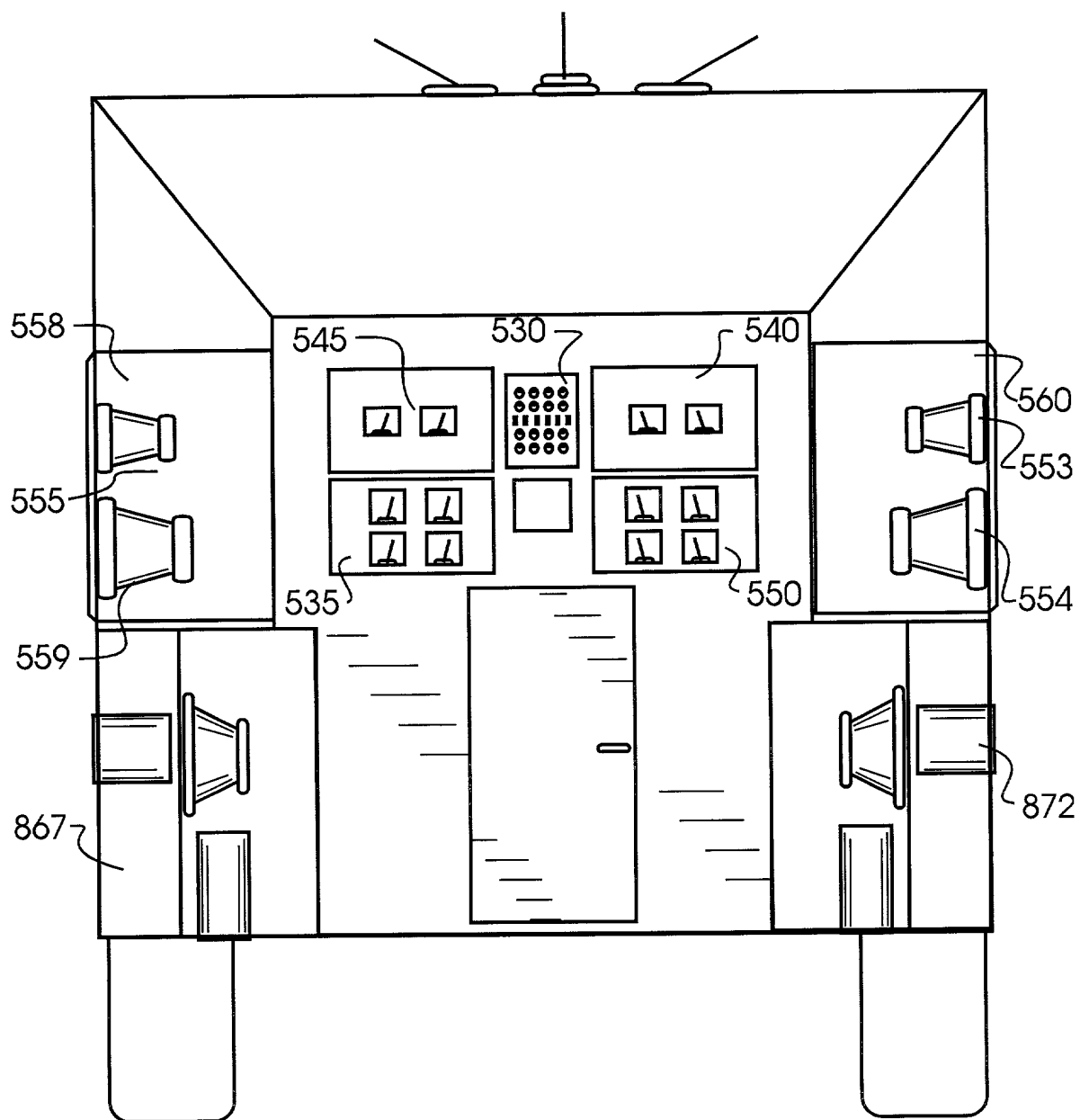


FIG. 10

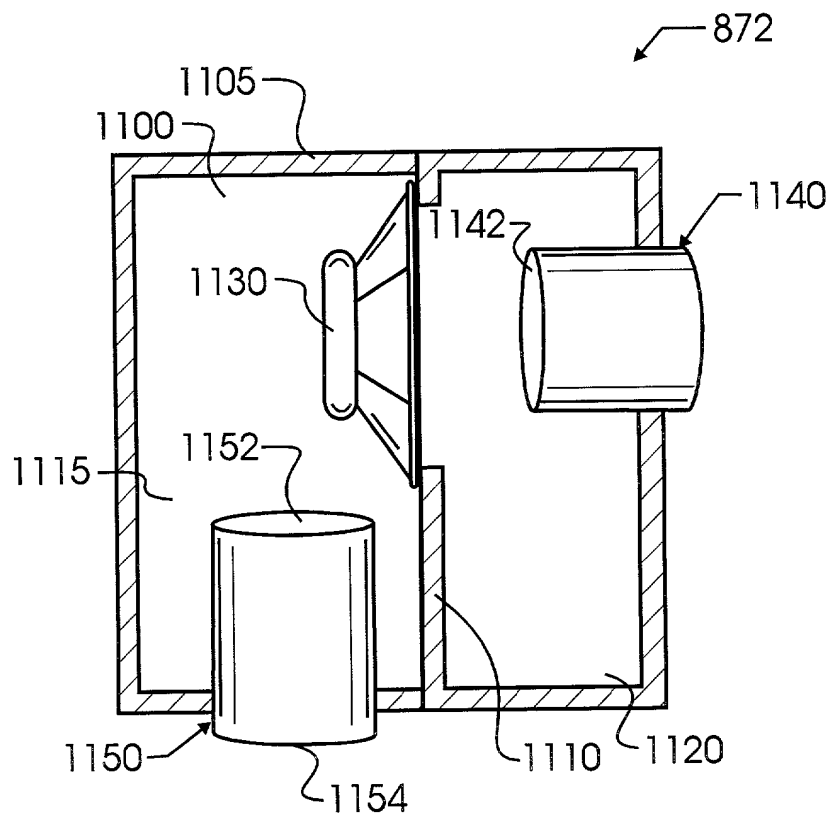


FIG. 11

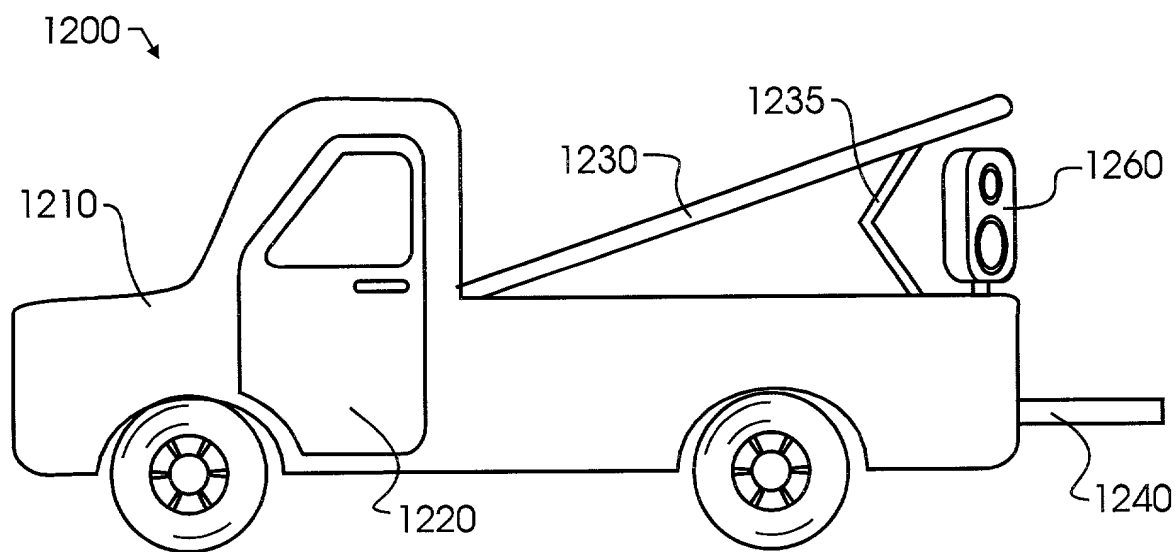


FIG. 12

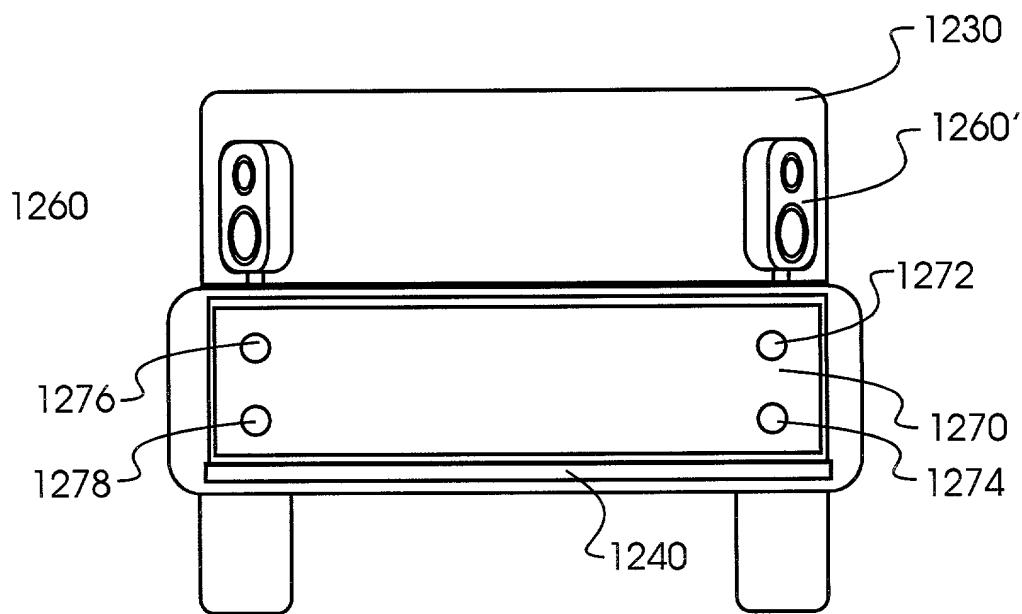


FIG. 13

DECLARATION, POWER OF ATTORNEY AND PETITION

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name; that I verily believe I am the original, first, and sole inventor of the invention entitled

Remote Broadcasting System

described and claimed in the specification which was filed herewith as docket # Hoeft-001017.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations section 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, section 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Applications (Number)	(Country)	Priority Claimed (Day/Month/Year Filed)	Yes	No
--	-----------	--	-----	----

NONE

I hereby claim the benefit under Title 35, United States Code, section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Serial #)	(Filing Date)	(Status-patented, pending, abandoned)
------------	---------------	---------------------------------------

NONE

I hereby appoint the following patent agent to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

Albert W. Watkins, Registration No. 31,676.

Direct all telephone calls to:

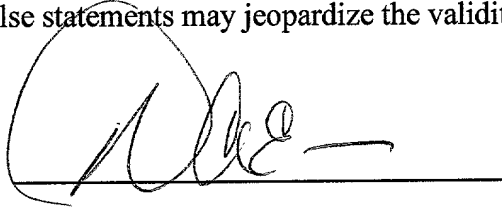
Albert W. Watkins at telephone number (320) 363-7296.

Address all correspondence to:

Albert W. Watkins
Quill & Disc Incorporated
30844 NE 1st Avenue
St. Joseph, MN 56374

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Inventor's Signature:



Date: 10/17/00

Inventor's Name: Duane A. Erwin

Residence Address: 1258 9th Avenue North

City: St. Cloud **County:** Stearns **State:** MN **Zip:** 56301

Citizenship: US

Post Office Address: Same as Residence